

Abstract

Beamsplitters are frequently used in projectors based on reflective liquid crystal displays for separating input and output light, and more recently for color management systems. Retarder stack filters are used in such systems to orthogonally polarize primary colors, converting polarizing beamsplitters to color splitters and combiners. Geometric polarization rotations induced by beamsplitters at moderate f-numbers have the effect of significantly degrading performance. Because retarder stacks in general rely on a specific input polarization to perform properly, such skew rays are responsible for color cross-talk. Retarder stacks designed according to the present invention are sensitive to the symmetries that exist between input and output polarizer configurations. These stacks provide the polarization transformations that will compensate for skew rays, such that normal incidence performance is maintained for all incident light.